IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application. No: 10/046,868	§
Filed: January 15, 2002	§
Inventor(s): Michael L. Santori and John Limroth	§
Title: System and Method for Performing Rapid Control Prototyping Using a Plurality of Graphical Programs that Share a Single Graphical User Interface	§
Examiner: Huynh, Ba	§
Group/Art Unit: 2179	§

Atty. Dkt. No: 5150-64600

APPEAL BRIEF

Box: Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir/Madam:

Further to the Notice of Appeal filed September 29, 2005, Appellant presents this Appeal Brief. Appellant respectfully requests that this appeal be considered by the Board of Patent Appeals and Interferences.

I. REAL PARTY IN INTEREST

The subject application is owned by National Instruments Corporation, a corporation organized and existing under and by virtue of the laws of the State of Delaware, and having its principal place of business at 11500 N. MoPac Expressway, Bldg. B, Austin, Texas 78759-3504.

II. RELATED APPEALS AND INTERFERENCES

No related appeals or interferences are known which would directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS

Claims 1 – 68 were originally filed in the application. In an amendment filed January 10, 2005, claims 1, 46, 60-62, 66, and 68 were amended, and claim 32 was canceled.

Claims 1-31 and 33-68 stand rejected under 35 U.S.C. § 103(a) and are the subject of this appeal. A copy of the claims incorporating entered amendments, and as on appeal, is included in the Claims Appendix hereto.

IV. STATUS OF AMENDMENTS

No amendments to the claims have been filed subsequent to the amendment of January 10, 2005. The Claims Appendix hereto reflects the current state of the claims.

V.   SUMMARY OF THE INDEPENDENT CLAIMS

Independent claim 1 recites a method for simulating a product being designed. The method comprises creating a first graphical program that models the product being designed, wherein the first graphical program is created in a first graphical program development environment. The first graphical program is deployed on a target device for execution, where the target device is coupled to a physical system. (*See Figures 9-14 and Summary, pp. 7-8*)

The method further comprises creating a second graphical program that performs a measurement function, where the second graphical program is created in a second graphical program development environment, i.e., a different graphical program development environment than the first graphical program development environment in which the first graphical program is created. (*See Figures 9-14 and Summary, p. 8*)

The method further comprises executing the second graphical program concurrently with the first graphical program. The first graphical program executes on the target device to simulate operation of the product, where the target device interacts with the physical system. The second graphical program executes concurrently with the first graphical program to measure at least one of: 1) characteristics of the operation of the physical system and/or 2) characteristics of the operation of the product. (*See Figures 9-14 and Summary, p. 9*)

The method further comprises displaying a single graphical user interface comprising both a first one or more graphical user interface elements for the first graphical program created in the first graphical program development environment and a second one or more graphical user interface elements for the second graphical program created in the second graphical program development environment. (*See Figures 6-8 and 9-14; and Summary, pp. 9-10*)

Independent claim 46 recites a system for simulating a product being designed. Independent claims 60 and 61 recite methods for simulating a product being designed. Independent claim 62 recites a method for performing a rapid control prototyping simulation.   Independent claim 66 recites a system for performing a rapid control

prototyping simulation. Independent claim 68 recites a method for evaluating operation of a control unit being designed. The independent claims 46, 60-62, 66, and 68 all recite limitations similar to those of claim 1.

VI.   GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-31 and 33-68 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Publication No. 2001/0034881 to Washington.

VII.   ARGUMENT

Claims 1-31 and 33-68 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Publication No. 2001/0034881 to Washington (hereinafter "Washington"). Appellant respectfully traverses the rejection for the reasons discussed below.

Before addressing the claim rejections, Appellant first notes that the subject matter in the presently rejected claims was conceived prior to the effective date of the Washington reference. However, Appellant has not yet filed an oath or declaration under 37 C.F.R. §1.131 to establish prior invention because Appellant earnestly believes that the claim rejections based on Washington are erroneous and completely without merit, as discussed below.

Independent Claims 1, 46, 60-62, 66, and 68

Taking claim 1 as an exemplary independent claim, the claim reads as follows:

1. (Previously Presented) A method for simulating a product being designed, the method comprising:

creating a first graphical program that models the product being designed, wherein the first graphical program is created in a first graphical program development environment;

deploying the first graphical program on a target device for execution;

creating a second graphical program that performs a measurement function, wherein the second graphical program is created in a second graphical program development environment, wherein the second graphical program development environment is different than the first graphical program development environment;

coupling the target device to a physical system;

executing the first graphical program on the target device to simulate operation of the product, wherein the target device interacts with the physical system;

executing the second graphical program concurrently with the first graphical program to measure at least one of: 1) characteristics of the operation of the physical system and/or 2) characteristics of the operation of the product; and

displaying a single graphical user interface comprising a first one or more graphical user interface elements for the first graphical program and a second one or more graphical user interface elements for the second graphical program.

Thus, the method comprises, in pertinent part, executing the second graphical program concurrently with the first graphical program, wherein the first graphical program is created in a first graphical program development environment, wherein the second graphical program is created in a second (different) graphical program development environment, and wherein a single graphical user interface comprises a first one or more graphical user interface elements for the first graphical program and a second one or more graphical user interface elements for the second graphical program.

Appellant first notes that Washington does not teach, or even remotely suggest, a method that involves performing a concurrent execution of two different graphical programs that are created in two different graphical program development environments. Washington teaches a graphical program generation (GPG) program that is operable to programmatically generate a graphical program. In other words, instead of the graphical program being manually created in response to user input directly selecting nodes for inclusion in the graphical program and specifying connections among the nodes, the GPG program automatically generates the graphical program. (See paragraph 0098.)

In paragraph 0101, Washington teaches that:

"In various embodiments, the GPG program may generate a graphical program of any of various types. For example, the GPG program may generate the graphical program specifically so that a particular graphical programming development environment is operable to edit and/or execute the graphical program."

In paragraph 0126, Washington teaches that:

"In various embodiments, the GPG program may be operable to generate any of various types of graphical programs. For example, as discussed above, a generated graphical program may be targeted toward a particular graphical programming development environment application, e.g., to utilize proprietary features or to create files that are formatted in a manner expected by the graphical programming development environment. Examples of graphical programming development environments include LabVIEW, BridgeVIEW, DasyLab, and DiaDem from National Instruments, VEE from Hewlett Packard, Simulink from The MathWorks, Softwire from Measurement Computing, Inc., Sanscript from Northwoods Software, WiT from Coreco, and Vision Program Manager from PPT Vision, among others."

On the basis of the above-recited teaching in Washington, the Examiner has asserted that, "the GPG program supports multiple graphical development environment." However, Washington does not teach that a single embodiment of the GPG program is operable to programmatically generate graphical programs targeted toward multiple different graphical program development environments, but rather teaches that in various embodiments, the GPG program may be operable to programmatically generate a graphical program targeted toward a (single) particular graphical program development environment, and then lists examples of graphical program development environments.

More to the point, even if Washington did teach that a single embodiment of the GPG program supported multiple graphical development environments, this would still not be relevant to the rejection of claim 1. Claim 1 recites a method comprising performing a concurrent execution of two different graphical programs. The mere assertion that different kinds of graphical programs could be programmatically or automatically generated provides no more motivation for performing a concurrent execution of different graphical programs targeted toward different graphical program development environments than does the fact that different graphical programs can be manually created in different graphical program development environments in response to direct user input. Washington simply contains no teaching of a method that comprises performing a concurrent execution of two different graphical programs associated with two different graphical program development environments, whether they be programmatically generated or manually created.

Furthermore, Washington contains no teaching or suggestion of, "displaying a single graphical user interface comprising a first one or more graphical user interface elements for the first graphical program and a second one or more graphical user interface elements for the second graphical program." The Examiner admits that "Washingon's disclosure is not clear regarding the displaying one or more elements of the first and second graphical program in a same graphical user interface", but then goes on to assert various speculated properties of Washington's GPG program, including the assertion that "since the GPG support multiple graphical programs created in different graphical development environments, it is within the capability of the GPG to display one or more elements of the first and second graphical program in a same graphical user interface". As discussed above,

Appellant disagrees with the Examiner's reading of Washington regarding the GPG program supporting multiple graphical program development environments. In any case, Washington certainly does not disclose that the GPG program is operable to display one or more elements for a first graphical program and one or more elements for a second graphical program in a single graphical user interface, as asserted by the Examiner. This feature simply is not taught or even remotely suggested by Washington.

The Examiner further asserts that "it would be naturally desirable to have a single GUI on which the user can control or monitor operations of the concurrently running multiple graphical programs", and then asserts that "it would have been obvious to one of skill in the art, at the time the invention was made, to implement the execution of the second graphical program concurrently with the first one to measure operation performance of the being modeled physical device, and displaying of one or more elements of the first and second graphical program in a same graphical user interface, such as a front panel, to Washington, which implementation enables the user to control or monitor operations of the first and second graphical program."

Appellant respectfully submits that the Examiner's arguments and conclusions are improper and incorrect, and submits that the Examiner has simply applied hindsight analysis, using the Appellant's claims as a blueprint in an attempt to construct Appellant's invention as claimed, which is improper. In fact, Appellant respectfully submits that the Examiner has simply added Appellant's novel claimed features and limitations to Washington (and omitted primary aspects of Washington, such as the GPG program necessarily programmatically generating the graphical program(s)), in the attempt to construct Appellant's invention. Moreover, the only motivations suggested by the Examiner to modify Washington to include the presently claimed features and limitations is that "it would be naturally desirable", and that the implementation "enables the user to control or monitor operations of the first and second graphical program".

Appellant notes that per *In re Dembiczak*, 175 F.3d 994, 50 USPQ2d 1614 (Fed. Cir. 1999), the art must fairly teach or suggest to one to make the specific combination as claimed. *That one achieves an improved result by making such a combination is no more than hindsight without an initial suggestion to make the combination.* Appellant respectfully submits that the Examiner has simply cited an improved result as motivation

to modify Washington to include the features and limitations of claim 1, which is improper.

Appellant further submits that the concept of a single graphical user interface that displays graphical user interface elements from two concurrently executing graphical programs created in different graphical program development environments is a novel concept that is unknown in the prior art, and Washington contains no teaching or suggestion that would motivate one to veer from the prior art in this regard.

Appellant further submits that Washington does not teach a method that involves performing a concurrent execution of a first graphical program that models a product being designed and a second graphical program that performs a measurement function, wherein the first graphical program is deployed on a target device for execution, wherein the target device is coupled to a physical system, wherein the first graphical program on the target device executes to simulate operation of the product, wherein the target device interacts with the physical system, and wherein the second graphical program executes concurrently with the first graphical program to measure at least one of: 1) characteristics of the operation of the physical system and/or 2) characteristics of the operation of the product. As recited in the preamble of claim 1, the method, and in particular, the above-recited limitations of the method, are directed toward simulating a product being designed. Washington, in contrast, relates to a system and various methods for enhancing the readability of a graphical program. Appellant respectfully submits that the problem of enhancing the readability of a graphical program is an entirely different problem than the problem of simulating a product being designed. Since Washington relates to enhancing the readability of a graphical program, there would be no reason at all for Washington to teach the combination of elements recited in claim 1, i.e., to teach a method for simulating a product being designed. Appellant notes that the only references pertaining to simulation in Washington are in the Description of the Related Art section, which simply mentions in passing that graphical programs may be used in performing simulation applications.

Appellant submits that although Washington discloses certain individual elements of claim 1, Washington does not teach the <u>combination</u> of elements recited in claim 1 or provide any suggestion that would motivate one to combine the elements to arrive at the recited combination. For example, Washington discloses that a graphical program for

modeling a device may be constructed (0009), and also discloses that a graphical program for performing a measurement function may be constructed (0069). However, Washington does not teach a method that involves executing a second graphical program concurrently with a first graphical program, wherein the first graphical program models a product being designed and the second graphical program performs a measurement function. Appellant also notes that the Examiner provides no evidence of a suggestion that would motivate one to perform such a concurrent execution. Appellant submits that such a suggestion is absent from Washington. As described above, Washington relates to enhancing the readability of a graphical program, and thus, there would be no reason at all for Washington to teach or suggest such a concurrent execution of two different graphical programs, where one graphical program models a product being designed and the other graphical program performs a measurement function.

Washington similarly fails to teach or suggest numerous other aspects of the combination of elements recited in claim 1, such as the target device on which the first graphical program is deployed interacting with the physical system, and the second graphical program executing concurrently with the first graphical program to measure at least one of: 1) characteristics of the operation of the physical system and/or 2) characteristics of the operation of the product. Appellant respectfully submits that the above examples are all examples of the Examiner using the Appellant's claims as a blueprint in an attempt to construct Appellant's invention as claimed.

Appellant notes that the Advisory Action of August 12, 2005 states different reasoning regarding the rejection of claim 1 than either of the two Office Actions. The Advisory Action notes that Washington, via U.S. Patent No. 5,301,336 to Kodosky et al. (hereinafter "Kodosky"), which is incorporated by reference in Washington, teaches that a graphical program (VI) can have a sub-program (sub-VI) that is executed concurrently with the graphical program. The Examiner asserts that the combination of Washington and Kodoksy thus read on a single graphical user interface having two graphical programs executed concurrently.

However, the Examiner has ignored the limitation that the first graphical program and the second graphical program are created in two different graphical program development environments. As recited in claim 1, "the first graphical program is created

in a first graphical program development environment", and "the second graphical program is created in a second graphical program development environment, wherein the second graphical program development environment is different than the first graphical program development environment". Neither Washington nor Kodosky teach a graphical program or VI created in one graphical program development environment, wherein the graphical program executes a graphical sub-program or sub-VI that was created in another graphical program development environment. Furthermore, a sub-VI as taught in Kodosky has its own front panel (graphical user interface) which is separate from the front panel of the VI that includes the sub-VI. Neither Washington nor Kodosky teach displaying graphical user interface elements for both a graphical program (VI) and a sub-program (sub-VI) of the graphical program in a single graphical user interface. Furthermore, Washington also fails to teach many of the other limitations recited in claim 1, as discussed above, and combining the teaching of Kodosky with Washington does not remedy these other deficiencies.

Thus, for at least the reasons set forth above, Appellant respectfully submits that Washington does not teach or suggest several elements of claim 1, and certainly does not teach or suggest the combination of elements recited in claim 1, and therefore provides no basis for establishing prima facie obviousness. Appellant thus submits that claim 1, and the claims dependent thereon, are patentable over Washington. Inasmuch as independent claims 46, 60, 60-62, 66, and 68 recite similar subject matter as claim 1, Appellant also submits that these claims, and the claims respectively dependent thereon, are also patentable over Washington.

Claim 3

Claim 3 is separately patentable because Washington does not teach or suggest the limitations recited in this claim. For example, claim 3 adds to claim 2 the elements of, "wherein the first graphical program comprises a model of the product being designed; wherein the one or more parameters affect operation of the model of the product being designed."

Washington contains no teaching regarding displaying one or more parameters in a graphical user interface for a graphical program, wherein the graphical program comprises a

model of a product being designed, and wherein the one or more parameters affect operation of the model of the product being designed.

Claim 4, 48

Claims 4 and 48 are separately patentable because Washington does not teach or suggest the limitations recited in these claims. For example, claim 4 adds to claim 3 the elements of, "receiving user input to one of the first one or more graphical user interface elements to adjust operation of the first graphical program during said executing the first graphical program; wherein the user input operates to adjust the model of the product being designed."

Washington contains no teaching regarding receiving user input to adjust operation of a graphical program during execution of the graphical program, wherein the graphical program comprises a model of a product being designed, and wherein the user input operates to adjust the model of the product being designed.

Claim 5, 49, 63

Claims 5, 49, and 63 are separately patentable because Washington does not teach or suggest the limitations recited in these claims. For example, claim 5 adds to claim 1 the elements of, "wherein the second one or more graphical user interface elements for the second graphical program display measured characteristics relating to at least one of: 1) operation of the physical system and/or 2) operation of the target device."

Washington does not teach a method comprising executing a second graphical program concurrently with a first graphical program, wherein the first graphical program executes on a target device that is coupled to a physical system, wherein a single graphical user interface comprising a first one or more graphical user interface elements for a first graphical program and a second one or more graphical user interface elements for a second graphical program is displayed, and wherein the second one or more graphical user interface elements for the second graphical program display measured characteristics relating to at least one of: 1) operation of the physical system and/or 2) operation of the target device.

Claim 6

Claim 6 is separately patentable because Washington does not teach or suggest the limitations recited in this claim. For example, claim 6 adds to claim 1 the limitation of, "receiving user input to one of the second one or more graphical user interface elements to adjust operation of the measurement function during said executing the second graphical program."

Washington contains no teaching regarding receiving user input to one of a second one or more graphical user interface elements for a second graphical program, wherein the user input adjusts operation of a measurement function performed by the second graphical program, and wherein the second one or more graphical user interface elements are displayed in a graphical user interface that also displays a first one or more graphical user interface elements for a concurrently executing first graphical program.

Claim 7, 65

Claims 7 and 65 are separately patentable because Washington does not teach or suggest the limitations recited in these claims. For example, claim 7 adds to claim 1 the limitations of:

> coupling a first computer system to the target device;
> wherein said executing the second graphical program comprises executing the second graphical program on the first computer system;
> wherein said executing the second graphical program to measure characteristics of the operation of the product comprises executing the second graphical program to measure characteristics of the target device.

Washington contains no teaching regarding a method that comprises executing a second graphical program concurrently with a first graphical program, wherein the second graphical program executes on a computer system, and wherein the first graphical program executes on a target device coupled to the computer system.

Claim 8

Claim 8 is separately patentable because Washington does not teach or suggest the limitations recited in this claim. For example, claim 8 adds to claim 7 the limitations of, "displaying the single graphical user interface on a display screen of the first computer system."

Washington contains no teaching regarding a method that comprises executing a second graphical program concurrently with a first graphical program, wherein the second graphical program executes on a computer system, wherein the first graphical program executes on a target device coupled to the computer system, and wherein a single graphical user interface that displays both one or more graphical user interface elements for the first graphical program and one or more graphical user interface elements for the second graphical program is displayed on a display screen of the computer system.

Claim 9

Claim 9 is separately patentable because Washington does not teach or suggest the limitations recited in this claim. For example, claim 9 adds to claim 1 the limitations of:

> coupling a first computer system to the physical system;
> wherein said executing the second graphical program comprises executing the second graphical program on the first computer system;
> wherein the second graphical program is executable to cause the first computer system to interface with the physical system through one or more instruments to measure characteristics of the physical system.

Washington contains no teaching regarding a method that comprises executing a second graphical program concurrently with a first graphical program, wherein the second graphical program executes on a computer system that is coupled to a physical system, wherein the first graphical program executes on a target device coupled to the physical system, and wherein the second graphical program is executable to cause the first computer system to interface with the physical system through one or more instruments to measure characteristics of the physical system.

Claim 10

Claims 10 is separately patentable because Washington does not teach or suggest the limitations recited in this claim. For example, claim 10 adds to claim 9 the limitation of, "displaying the single graphical user interface on a display screen of the first computer system."

Washington contains no teaching regarding a method that comprises executing a second graphical program concurrently with a first graphical program, wherein the second graphical program executes on a computer system that is coupled to a physical system, wherein the first graphical program executes on a target device coupled to the physical system, and wherein a single graphical user interface that displays both one or more graphical user interface elements for the first graphical program and one or more graphical user interface elements for the second graphical program is displayed on a display screen of the computer system.

Claim 20

Claims 20 is separately patentable because Washington does not teach or suggest the limitations recited in this claim. For example, claim 20 adds to claim 1 the limitation of, "assembling the first one or more graphical user interface elements and the second one or more graphical user interface elements on a display in response to user input."

Washington contains no teaching regarding a method that comprises assembling a first one or more graphical user interface elements for a first graphical program and a second one or more graphical user interface elements for a second graphical program on a display in response to user input, wherein both the first one or more graphical user interface elements for the first graphical program and the second one or more graphical user interface elements for the second graphical program are displayed in a single graphical user interface.

Claim 21

Claim 21 is separately patentable because Washington does not teach or suggest the limitations recited in this claim. For example, claim 21 adds to claim 1 the limitation of, "assembling the first one or more graphical user interface elements and the second one or more graphical user interface elements on a single window of a display in response to user input."

Appellant notes that the Office Actions do not provide any reasoning for the rejection of claim 21. Washington contains no teaching regarding a method that comprises assembling a first one or more graphical user interface elements for a first

graphical program and a second one or more graphical user interface elements for a second graphical program on a single window of a display, wherein the first graphical program is created in a first graphical program development environment, and the second graphical program is created in a second graphical program development environment.

Claim 22

Claim 22 is separately patentable because Washington does not teach or suggest the limitations recited in this claim. For example, claim 22 adds to claim 1 the limitations of, "wherein the first one or more graphical user interface elements are selected from the first graphical program development environment; and wherein the second one or more graphical user interface elements are selected from the second graphical program development environment."

Appellant notes that the Office Actions do not provide any reasoning for the rejection of claim 22. Washington contains no teaching regarding a method that comprises displaying a single graphical user interface comprising a first one or more graphical user interface elements for a first graphical program and a second one or more graphical user interface elements for a second graphical program, wherein the first one or more graphical user interface elements are selected from a first graphical program development environment used to create the first graphical program, and wherein the second one or more graphical user interface elements are selected from a second graphical program development environment used to create the second graphical program.

Claim 23

Claim 23 is separately patentable because Washington does not teach or suggest the limitations recited in this claim. For example, claim 23 adds to claim 1 the limitation of, "wherein the first one or more graphical user interface elements and the second one or more graphical user interface elements are selected from the second graphical program development environment."

Although claims 23-29 recite different limitations, the Examiner has simply lumped all of these claims together and asserted that, "the front panel can be created in

either the first or second graphical program, and can be populated with GUI elements selected from either the first graphical program, the second graphical program, or both." However, Appellant notes that the rejection of claims 23-29 does not reference any portion of Washington that supports this assertion, and that in fact, the Examiner's assertion is entirely unsupported by Washington.

In particular, with regard to claim 23, Washington contains no teaching regarding a method that comprises displaying a single graphical user interface comprising a first one or more graphical user interface elements for a first graphical program and a second one or more graphical user interface elements for a second graphical program, wherein a first graphical program development environment is used to create the first graphical program, wherein a second graphical program development environment is used to create the second graphical program, and wherein both the first one or more graphical user interface elements and the second one or more graphical user interface elements are selected from the second graphical program development environment.

Claim 24

Claim 24 is separately patentable because Washington does not teach or suggest the limitations recited in this claim. For example, claim 24 adds to claim 1 the limitation of, "wherein the first one or more graphical user interface elements and the second one or more graphical user interface elements are selected from the first graphical program development environment."

As noted above with respect to claim 23, the Office Action provides no basis for the rejection of claim 24. In particular, Washington contains no teaching regarding a method that comprises displaying a single graphical user interface comprising a first one or more graphical user interface elements for a first graphical program and a second one or more graphical user interface elements for a second graphical program, wherein a first graphical program development environment is used to create the first graphical program, wherein a second graphical program development environment is used to create the second graphical program, and wherein the first one or more graphical user interface elements and the second one or more graphical user interface elements are selected from the first graphical program development environment.

Claim 25

Claim 25 is separately patentable because Washington does not teach or suggest the limitations recited in this claim. For example, claim 25 adds to claim 1 the limitation of, "creating the single graphical user interface in response to user input, wherein said creating includes selecting the first one or more graphical user interface elements from the first graphical program development environment and selecting the second one or more graphical user interface elements from the second graphical program development environment."

As noted above with respect to claim 23, the Office Action provides no basis for the rejection of claim 25. In particular, Washington contains no teaching regarding a method that comprises creating a single graphical user interface that comprises a first one or more graphical user interface elements for a first graphical program and a second one or more graphical user interface elements for a second graphical program, wherein a first graphical program development environment is used to create the first graphical program, wherein a second graphical program development environment is used to create the second graphical program, and wherein the first one or more graphical user interface elements are selected from the first graphical program development environment and the second one or more graphical user interface elements are selected from the second graphical program development environment.

Claim 26

Claim 26 is separately patentable because Washington does not teach or suggest the limitations recited in this claim. For example, claim 26 adds to claim 1 the limitations of:

> selecting the first one or more graphical user interface elements from the first graphical program development environment;
> creating the single graphical user interface in the second graphical program development environment, wherein said creating comprises including the first one or more graphical user interface elements selected from the first graphical program development environment in the single graphical user interface.

As noted above with respect to claim 23, the Office Action provides no basis for the rejection of claim 26. In particular, Washington contains no teaching regarding a method that comprises displaying a single graphical user interface that comprises a first one or more graphical user interface elements for a first graphical program and a second one or more graphical user interface elements for a second graphical program, wherein a first graphical program development environment is used to create the first graphical program, wherein a second graphical program development environment is used to create the second graphical program, wherein the first one or more graphical user interface elements are selected from the first graphical program development environment, and wherein the single graphical user interface is created in the second graphical program development environment.

Claim 27

Claim 27 is separately patentable because Washington does not teach or suggest the limitations recited in this claim. For example, claim 27 adds to claim 26 the limitation of, "wherein said creating the single graphical user interface in the second graphical program development environment includes selecting the second one or more graphical user interface elements from the second graphical program development environment."

Washington contains no teaching regarding a method that comprises displaying a single graphical user interface that comprises a first one or more graphical user interface elements for a first graphical program and a second one or more graphical user interface elements for a second graphical program, wherein a first graphical program development environment is used to create the first graphical program, wherein a second graphical program development environment is used to create the second graphical program, wherein the first one or more graphical user interface elements are selected from the first graphical program development environment, wherein the second one or more graphical user interface elements are selected from the second graphical program development environment, and wherein the single graphical user interface is created in the second graphical program development environment.

Claim 28, 53

Claims 28 and 53 are separately patentable because Washington does not teach or suggest the limitations recited in these claims. For example, claim 28 adds to claim 1 the limitation of, "wherein the single graphical user interface comprises a single window containing the first one or more graphical user interface elements and the second one or more graphical user interface elements."

As noted above, with respect to claim 23 the Office Action provides no basis for the rejection of claim 28. In particular, Washington contains no teaching regarding a method that comprises displaying a single window that comprises a first one or more graphical user interface elements for a first graphical program and a second one or more graphical user interface elements for a second graphical program, wherein a first graphical program development environment is used to create the first graphical program, and wherein a second graphical program development environment is used to create the second graphical program.

Claim 29

Claim 29 is separately patentable because Washington does not teach or suggest the limitations recited in this claim. For example, claim 29 adds to claim 1 the limitation of, "wherein the single graphical user interface comprises a single front panel containing the first one or more graphical user interface elements and the second one or more graphical user interface elements."

As noted above with respect to claim 23, the Office Action provides no basis for the rejection of claim 29. In particular, Washington contains no teaching regarding a method that comprises displaying a single front panel that comprises a first one or more graphical user interface elements for a first graphical program and a second one or more graphical user interface elements for a second graphical program, wherein a first graphical program development environment is used to create the first graphical program, and wherein a second graphical program development environment is used to create the second graphical program.

Claim 33, 55

Claims 33 and 55 are separately patentable because Washington does not teach or suggest the limitations recited in these claims. For example, claim 33 adds to claim 1 the limitations of, "wherein said executing the second graphical program comprises executing the second graphical program to measure characteristics of the operation of the physical system; wherein the measured characteristics of the operation of the physical system are useful in analyzing operation of the product."

Washington contains no teaching or suggestion regarding a method that comprises executing a second graphical program concurrently with a first graphical program, wherein the second graphical program measures characteristics of the operation of a physical system, wherein the physical system is coupled to a target device, wherein the target device executes a first graphical program that models a product being designed, and wherein the characteristics of the operation of the physical system measured by the second graphical program are useful in analyzing operation of the product that is modeled by the first graphical program.

Claim 34

Claim 34 is separately patentable because Washington does not teach or suggest the limitations recited in this claim. For example, claim 34 adds to claim 1 the limitations of, "wherein said executing the second graphical program comprises executing the second graphical program to measure characteristics of the operation of the product; wherein the measured characteristics of the operation of the product are useful in analyzing operation of the product."

Washington contains no teaching or suggestion regarding a method that comprises executing a second graphical program concurrently with a first graphical program, wherein the first graphical program models a product being designed, wherein the second graphical program measures characteristics of the operation of the product, and wherein the measured characteristics of the operation of the product are useful in analyzing operation of the product.

Claim 41

Claim 41 is separately patentable because Washington does not teach or suggest the limitations recited in this claim. For example, claim 41 adds to claim 1 the limitation of, "wherein the first graphical program comprises a Simulink diagram." Washington contains no teaching regarding a method that comprises displaying a single graphical user interface that comprises a first one or more graphical user interface elements for a first graphical program and a second one or more graphical user interface elements for a second graphical program, wherein the first graphical program comprises a Simulink diagram and is created using a first graphical program development environment (e.g., the Simulink graphical program development environment), and wherein the second graphical program is created using a second graphical program development environment.

Claim 42

Claim 42 is separately patentable because Washington does not teach or suggest the limitations recited in this claim. For example, claim 42 adds to claim 1 the limitation of, "wherein the second graphical program comprises a LabVIEW diagram." Washington contains no teaching regarding a method that comprises displaying a single graphical user interface that comprises a first one or more graphical user interface elements for a first graphical program and a second one or more graphical user interface elements for a second graphical program, wherein the first graphical program is created using a first graphical program development environment, and wherein the second graphical program comprises a LabVIEW diagram and is created using a second graphical program development environment (e.g., the LabVIEW graphical program development environment).

Claim 43, 59

Claims 43 and 59 are separately patentable because Washington does not teach or suggest the limitations recited in these claims. For example, claim 43 adds to claim 1 the limitation of, "wherein the method performs a rapid control prototyping simulation." As discussed above, Washington pertains to enhancing the readability of a graphical program. Washington's disclosure is almost entirely unrelated to simulation applications, with the

exception that the Description of the Related Art section mentions in passing that graphical programs may be used in performing simulation applications. Washington does not teach a method for performing a rapid control prototyping simulation, and in particular, does not teach the particular method recited in the combination of claims 1 and 43.

Claim 44

Claim 44 is separately patentable because Washington does not teach or suggest the limitations recited in this claim. For example, claim 44 adds to claim 1 the limitation of, "wherein the product being designed comprises a control unit for controlling the physical system."

Washington contains no teaching or suggestion regarding a method that comprises executing a second graphical program concurrently with a first graphical program, wherein the first graphical program models a control unit for controlling a physical system, wherein the first graphical program is executed on a target device coupled to the physical system, and wherein the second graphical program executes to measure at least one of: 1) characteristics of the operation of the physical system and/or 2) characteristics of the operation of the product.

Claim 45, 54

Claims 45 and 54 are separately patentable because Washington does not teach or suggest the limitations recited in these claims. For example, claim 45 adds to claim 1 the limitations of, "wherein the second graphical program is operable to measure characteristics of the operation of the physical system; wherein the measured characteristics of the operation of the physical system are useful in analyzing control of the physical system."

Washington contains no teaching or suggestion regarding a method that comprises executing a second graphical program concurrently with a first graphical program, wherein the first graphical program models a product being designed, wherein the first graphical program is executed on a target device coupled to a physical system, wherein the second graphical program executes to measure characteristics of the operation of the physical system, and wherein the measured characteristics of the operation of the physical system are useful in analyzing control of the physical system."

VIII. CONCLUSION

For the foregoing reasons, it is submitted that the Examiner's rejection of claims 1-31 and 33-68 was erroneous, and reversal of the Examiner's decision is respectfully requested.

The Commissioner is authorized to charge the appeal brief fee of $500.00 and any other fees that may be due to Meyertons, Hood, Kivlin, Kowert, & Goetzel, P.C. Deposit Account No. 501505/5150-64600/JCH. This Appeal Brief is submitted with a return receipt postcard.

Respectfully submitted,

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IX.   CLAIMS APPENDIX

The following lists the claims as incorporating entered amendments, and as on appeal.

1.   (Previously Presented) A method for simulating a product being designed, the method comprising:

creating a first graphical program that models the product being designed, wherein the first graphical program is created in a first graphical program development environment;

deploying the first graphical program on a target device for execution;

creating a second graphical program that performs a measurement function, wherein the second graphical program is created in a second graphical program development environment, wherein the second graphical program development environment is different than the first graphical program development environment;

coupling the target device to a physical system;

executing the first graphical program on the target device to simulate operation of the product, wherein the target device interacts with the physical system;

executing the second graphical program concurrently with the first graphical program to measure at least one of: 1) characteristics of the operation of the physical system and/or 2) characteristics of the operation of the product; and

displaying a single graphical user interface comprising a first one or more graphical user interface elements for the first graphical program and a second one or more graphical user interface elements for the second graphical program.

2.   (Original) The method of claim 1,

wherein the first one or more graphical user interface elements for the first graphical program display one or more parameters related to operation of the first graphical program.

3.   (Original) The method of claim 2,

wherein the first graphical program comprises a model of the product being designed;

wherein the one or more parameters affect operation of the model of the product being designed.

4.   (Original) The method of claim 3, further comprising:

receiving user input to one of the first one or more graphical user interface elements to adjust operation of the first graphical program during said executing the first graphical program;

wherein the user input operates to adjust the model of the product being designed.

5.   (Original) The method of claim 1,

wherein the second one or more graphical user interface elements for the second graphical program display measured characteristics relating to at least one of: 1) operation of the physical system and/or 2) operation of the target device.

6.   (Original) The method of claim 1, further comprising:

receiving user input to one of the second one or more graphical user interface elements to adjust operation of the measurement function during said executing the second graphical program.

7.   (Original) The method of claim 1, further comprising:

coupling a first computer system to the target device;

wherein said executing the second graphical program comprises executing the second graphical program on the first computer system;

wherein said executing the second graphical program to measure characteristics of the operation of the product comprises executing the second graphical program to measure characteristics of the target device.

8.   (Original) The method of claim 7, further comprising:

displaying the single graphical user interface on a display screen of the first computer system.

9. (Original) The method of claim 1, further comprising:

coupling a first computer system to the physical system;

wherein said executing the second graphical program comprises executing the second graphical program on the first computer system;

wherein the second graphical program is executable to cause the first computer system to interface with the physical system through one or more instruments to measure characteristics of the physical system.

10. (Original) The method of claim 9, further comprising:

displaying the single graphical user interface on a display screen of the first computer system.

11. (Original) The method of claim 1,

wherein said deploying the first graphical program on a target device for execution comprises transferring the first graphical program from a first computer system to the target device;

wherein the target device is a board comprised in a slot of the first computer system.

12. (Original) The method of claim 1,

wherein said deploying the first graphical program on a target device for execution comprises transferring the first graphical program from a first computer system to the target device;

wherein the target device is external to the first computer system.

13. (Original) The method of claim 1,

wherein said deploying the first graphical program on the target device comprises storing the first graphical program in a memory of the target device.

14.   (Original) The method of claim 13,

wherein the memory of the target device stores a graphical program execution engine for executing graphical programs created in the first graphical program development environment;

wherein said executing the first graphical program includes executing the graphical program execution engine.

15.   (Original) The method of claim 1,

wherein said deploying the first graphical program on the target device comprises:

    converting the first graphical program to machine language code; and

    storing the machine language code in a memory of the target device.

16.   (Original) The method of claim 1,

wherein said deploying the first graphical program on the target device comprises:

    converting the first graphical program to a program in a text-based programming language;

    compiling the program in the text-based programming language to machine language code; and

    storing the machine language code in a memory of the target device.

17.   (Original) The method of claim 1,

wherein the target device includes a programmable hardware element;

wherein said deploying the first graphical program on the target device comprises:

    converting the first graphical program to a hardware configuration program; and

    configuring the programmable hardware element on the target device according to the hardware configuration program.

18.   (Original) The method of claim 1,

wherein said target device interacting with the physical system comprises the target device controlling the physical system.

19. (Original) The method of claim 1,

wherein said coupling the target device to the physical system comprises coupling the target device to one or more actuators coupled to the physical system;

wherein the first graphical program is executable to cause the target device to control the physical system through the one or more actuators.

20. (Original) The method of claim 1, further comprising:

assembling the first one or more graphical user interface elements and the second one or more graphical user interface elements on a display in response to user input.

21. (Original) The method of claim 1, further comprising:

assembling the first one or more graphical user interface elements and the second one or more graphical user interface elements on a single window of a display in response to user input.

22. (Original) The method of claim 1,

wherein the first one or more graphical user interface elements are selected from the first graphical program development environment; and

wherein the second one or more graphical user interface elements are selected from the second graphical program development environment.

23. (Original) The method of claim 1,

wherein the first one or more graphical user interface elements and the second one or more graphical user interface elements are selected from the second graphical program development environment.

24. (Original) The method of claim 1,

wherein the first one or more graphical user interface elements and the second one or more graphical user interface elements are selected from the first graphical program development environment.

25.   (Original) The method of claim 1, further comprising:

creating the single graphical user interface in response to user input, wherein said creating includes selecting the first one or more graphical user interface elements from the first graphical program development environment and selecting the second one or more graphical user interface elements from the second graphical program development environment.

26.   (Original) The method of claim 1, further comprising:

selecting the first one or more graphical user interface elements from the first graphical program development environment;

' creating the single graphical user interface in the second graphical program development environment, wherein said creating comprises including the first one or more graphical user interface elements selected from the first graphical program development environment in the single graphical user interface.

27.   (Original) The method of claim 26,

wherein said creating the single graphical user interface in the second graphical program development environment includes selecting the second one or more graphical user interface elements from the second graphical program development environment.

28.   (Original) The method of claim 1,

wherein the single graphical user interface comprises a single window containing the first one or more graphical user interface elements and the second one or more graphical user interface elements.

29.   (Original) The method of claim 1,

wherein the single graphical user interface comprises a single front panel containing the first one or more graphical user interface elements and the second one or more graphical user interface elements.

30. (Original) The method of claim 1,

wherein the first one or more graphical user interface elements comprise:

one or more graphical user interface elements for receiving user input and providing the user input to the first graphical program; and

one or more graphical user interface elements for displaying output from the first graphical program.

31. (Original) The method of claim 1,

wherein the second one or more graphical user interface elements comprise:

one or more graphical user interface elements for receiving user input and providing the user input to the second graphical program; and

one or more graphical user interface elements for displaying output from the second graphical program.

32. (Cancelled)

33. (Original) The method of claim 1,

wherein said executing the second graphical program comprises executing the second graphical program to measure characteristics of the operation of the physical system;

wherein the measured characteristics of the operation of the physical system are useful in analyzing operation of the product.

34. (Original) The method of claim 1,

wherein said executing the second graphical program comprises executing the second graphical program to measure characteristics of the operation of the product;

wherein the measured characteristics of the operation of the product are useful in analyzing operation of the product.

35.   (Original) The method of claim 1,

wherein the first graphical program comprises a plurality of interconnected nodes which visually indicate functionality of the first graphical program.

36.   (Original) The method of claim 1,

wherein the second graphical program comprises a plurality of interconnected nodes which visually indicate functionality of the second graphical program.

37.   (Original) The method of claim 1,

wherein the first graphical program comprises a block diagram.

38.   (Original) The method of claim 1,

wherein the second graphical program comprises a block diagram.

39.   (Original) The method of claim 1,

wherein the first graphical program comprises one of a data flow diagram or a control flow diagram; and

wherein the second graphical program comprises one of a data flow diagram or a control flow diagram.

40.   (Original) The method of claim 1,

wherein the first graphical program comprises one of a data flow diagram and/or a state transition diagram;

wherein the second graphical program comprises a data flow diagram.

41.   (Original) The method of claim 1,

wherein the first graphical program comprises a Simulink diagram.

42.   (Original) The method of claim 1,

wherein the second graphical program comprises a LabVIEW diagram.

43.   (Original) The method of claim 1,

wherein the method performs a rapid control prototyping simulation.

44.   (Original) The method of claim 1,

wherein the product being designed comprises a control unit for controlling the physical system.

45.   (Original) The method of claim 44,

wherein the second graphical program is operable to measure characteristics of the operation of the physical system;

wherein the measured characteristics of the operation of the physical system are useful in analyzing control of the physical system.

46.   (Previously Presented) A system for simulating a product being designed, the system comprising:

a physical system;

a target device coupled to the physical system, wherein the target device is configured to execute a first graphical program that models a product being designed, wherein the first graphical program was created in a first graphical program development environment;

a first computer system coupled to the target device, wherein the first computer system is configured to execute a second graphical program that performs a measurement function, wherein the second graphical program was created in a second graphical program development environment, wherein the second graphical program development environment is different than the first graphical program development environment;

wherein the target device is operable to execute the first graphical program to simulate operation of the product, wherein the first graphical program causes the target device to interact with the physical system;

wherein the first computer system is operable to execute the second graphical program concurrently with the first graphical program to measure at least one of: 1) characteristics of the operation of the physical system and/or 2) characteristics of the operation of the product; and

wherein the first computer system is operable to display a single graphical user interface comprising a first one or more graphical user interface elements for the first graphical program and a second one or more graphical user interface elements for the second graphical program.

47. (Original) The system of claim 46,

wherein said target device interacting with the physical system comprises the target device controlling the physical system.

48. (Original) The system of claim 46,

wherein the first one or more graphical user interface elements for the first graphical program display one or more parameters related to operation of the first graphical program;

wherein the first graphical program comprises a model of the product being designed;

wherein the one or more parameters affect operation of the model of the product being designed;

wherein the system further comprises a user input device for receiving user input to one of the first one or more graphical user interface elements to adjust operation of the first graphical program;

wherein the user input operates to adjust the model of the product being designed.

49. (Original) The system of claim 46,

wherein the second one or more graphical user interface elements for the second graphical program display measured characteristics relating to operation of the target device;

the system further comprising:

a user input device for receiving user input to one of the second one or more graphical user interface elements to adjust operation of the measurement function.

50. (Original) The system of claim 46,

wherein the target device includes a processor and memory;

wherein the memory of the target device stores the first graphical program;

wherein the memory of the target device also stores a graphical program execution engine for executing graphical programs created in the first graphical program development environment;

wherein the processor in the target device is operable to execute the graphical program execution engine in executing the first graphical program.

51. (Original) The system of claim 46,

wherein the target device includes a processor and memory;

wherein the memory of the target device stores executable code created from the first graphical program; and

wherein the processor in the target device is operable to execute the executable code.

52. (Original) The system of claim 46,

wherein the target device includes a programmable hardware element;

wherein the programmable hardware element is configured with a hardware configuration program based on the first graphical program.

53. (Original) The system of claim 46,

wherein the single graphical user interface comprises a single window containing the first one or more graphical user interface elements and the second one or more graphical user interface elements.

54.   (Original) The system of claim 46,

wherein the first computer system is operable to execute the second graphical program to measure characteristics of the operation of the physical system;

wherein the measured characteristics of the operation of the physical system are useful in analyzing operation of the product.

55.   (Original) The system of claim 46,

wherein the first computer system is operable to execute the second graphical program to measure characteristics of the operation of the product;

wherein the measured characteristics of the operation of the product are useful in analyzing operation of the product.

56.   (Original) The system of claim 46,

wherein the first graphical program comprises a plurality of interconnected nodes which visually indicate functionality of the first graphical program.

57.   (Original) The system of claim 46,

wherein the second graphical program comprises a plurality of interconnected nodes which visually indicate functionality of the second graphical program.

58.   (Original) The system of claim 46,

wherein the first graphical program comprises a data flow diagram; and

wherein the second graphical program comprises one of a data flow diagram or a control flow diagram.

59.   (Original) The system of claim 46,

wherein the system performs a rapid control prototyping simulation.

60.   (Previously Presented) A method for simulating a product being designed, the method comprising:

creating a first graphical program that models the product being designed, wherein the first graphical program is created in a first graphical program development environment;

deploying the first graphical program on a target device for execution;

creating a second graphical program that performs a measurement function, wherein the second graphical program is created in a second graphical program development environment, wherein the second graphical program development environment is different than the first graphical program development environment;

coupling the target device to a physical system;

executing the first graphical program on the target device to simulate operation of the product, wherein the target device interacts with the physical system;

executing the second graphical program concurrently with the first graphical program to measure characteristics of the operation of the physical system; and

displaying a single graphical user interface window comprising a first one or more graphical user interface elements for the first graphical program and a second one or more graphical user interface elements for the second graphical program.

61.   (Previously Presented) A method for simulating a product being designed, the method comprising:

creating a first graphical program that models the product being designed, wherein the first graphical program is created in a first graphical program development environment;

deploying the first graphical program on a target device for execution;

creating a second graphical program that performs a measurement function, wherein the second graphical program is created in a second graphical program

development environment, wherein the second graphical program development environment is different than the first graphical program development environment;

coupling the target device to a physical system;

executing the first graphical program on the target device to simulate operation of the product, wherein the target device interacts with the physical system;

executing the second graphical program concurrently with the first graphical program to measure characteristics of the operation of the target device; and

displaying a single graphical user interface window comprising a first one or more graphical user interface elements for the first graphical program and a second one or more graphical user interface elements for the second graphical program.

62.   (Previously Presented) A method for performing a rapid control prototyping simulation, the method comprising:

creating a first graphical program that models a product being designed, wherein the first graphical program is created in a first graphical program development environment;

deploying the first graphical program on a target device for execution;

creating a second graphical program that performs a measurement function, wherein the second graphical program is created in a second graphical program development environment, wherein the second graphical program development environment is different than the first graphical program development environment;

coupling the target device to a physical system;

executing the first graphical program on the target device to simulate operation of the product, wherein the target device interacts with the physical system;

executing the second graphical program concurrently with the first graphical program to measure characteristics of the operation of the physical system; and

displaying a single graphical user interface comprising a first plurality of graphical user interface elements for the first graphical program and a second plurality of graphical user interface elements for the second graphical program.

63.   (Original) The method of claim 62,

wherein the second plurality of graphical user interface elements for the second graphical program display measured characteristics relating to operation of the physical system.

64.   (Original) The method of claim 62, further comprising:

coupling one or more sensors to the physical system, wherein the sensors are operable to receive signals from the physical system and provide the received signals to the second graphical program.

65.   (Original) The method of claim 62, further comprising:

coupling a first computer system to the physical system; and

executing the second graphical program on the first computer system.

66.   (Previously Presented) A system for performing a rapid control prototyping simulation, the system comprising:

a physical system;

a target device coupled to the physical system, wherein the target device is configured to execute a first graphical program that models a product being designed, wherein the first graphical program was created in a first graphical program development environment;

a first computer system coupled to the physical system, wherein the first computer system is configured to execute a second graphical program that performs a measurement function, wherein the second graphical program was created in a second graphical program development environment, wherein the second graphical program development environment is different than the first graphical program development environment;

wherein the target device is operable to execute the first graphical program to simulate operation of the product, wherein the first graphical program causes the target device to interact with the physical system;

wherein the first computer system is operable to execute the second graphical program concurrently with the first graphical program to measure characteristics of the operation of the physical system; and

wherein the first computer system is operable to display a single graphical user interface comprising a first plurality of graphical user interface elements for the first graphical program and a second plurality of graphical user interface elements for the second graphical program.

67.   (Original) The system of claim 66,

wherein said target device interacting with the physical system comprises the target device controlling the physical system.

68.   (Previously Presented) A method for evaluating operation of a control unit being designed, the method comprising:

creating a first graphical program that models the control unit being designed, wherein the first graphical program is created in a first graphical program development environment;

deploying the first graphical program on a target device for execution;

creating a second graphical program that performs a measurement function, wherein the second graphical program is created in a second graphical program development environment, wherein the second graphical program development environment is different than the first graphical program development environment;

coupling the target device to a physical system;

executing the first graphical program on the target device to simulate operation of the control unit, wherein the target device interacts with the physical system to control the physical system;

executing the second graphical program concurrently with the first graphical program to measure characteristics of the operation of the physical system, wherein the measured characteristics are useful in analyzing operation of the control unit; and

displaying a single graphical user interface comprising a first one or more graphical user interface elements for the first graphical program and a second one or more graphical user interface elements for the second graphical program.

X.   EVIDENCE APPENDIX

No evidence submitted under 37 CFR §§ 1.130, 1.131 or 1.132 or otherwise entered by the Examiner is relied upon in this appeal.

XI. <u>RELATED PROCEEDINGS APPENDIX</u>

There are no related proceedings.